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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/850,346	05/07/2001	Fabian Edgar Ernst	PHNL 000275	2300
24737	7590	07/27/2005	EXAMINER REKSTAD, ERICK J	
PHILIPS INTELLECTUAL PROPERTY & STANDARDS P.O. BOX 3001 BRIARCLIFF MANOR, NY 10510			ART UNIT 2613	PAPER NUMBER

DATE MAILED: 07/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/850,346	Applicant(s) ERNST ET AL.	
	Examiner Erick Rekstad	Art Unit 2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 May 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 May 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This is a first action for application no. 09/850,346 in response to the RCE filed on May 12, 2005 wherein claims 1-10 are presented for examination.

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 12, 2005 has been entered.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-10 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

[claim 1]

Claim 1 states the requirement 'wherein steps (a), (b) and (c) are repeated for adjacent blocks of the first image when there is a change of value of the chosen optimal candidate value from a previous repetition, using a comparison of a rise of the attendant matching error to a predetermined criterion.' This requirement would cause the method to continuously go back and repeat the steps (a), (b) and (c) for the adjacent blocks

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(blocks to the left, right, top and bottom) where the values for the left and top blocks should have already been determined. Therefore causing an endless loop of computing a match between images. It is recommended by the examiner to note page 2 lines 23-29, page 6 lines 10-18, and page 8 lines 30-page 9 lines 4.

Further, the claim states 'using a comparison of a rise of the attendant matching error to a predetermined criterion.' The claim is unclear as to the use of this comparison.

[claims 2-4]

Claims 2-4 are dependent on claim 1 and therefore are also rejected.

[claims 5 and 9]

Claims 5 and 9 state, 'the selection of an optimal candidate value for adjacent blocks when there is a change'. The definition of adjacent block is not defined in the claim nor in the specification. There is no clear definition of adjacent blocks. The adjacent blocks could be the blocks near the block in the second image containing the current optimal value in, the blocks near any of the previous blocks used for a candidate value, the blocks adjacent the block currently being processed, etc.

[claims 6-8 and 10]

Claims 6-8 and 10 are dependent on the rejected claims 5 and 9 and therefore are also rejected.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the method of claim 1

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must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over "Adaptive multiple-candidate hierarchical search for block matching algorithm" to Chan Y.L. et al. in view of US Patent 6,542,547 to Wong.

[claim 1]

As shown on page 1638 under "Proposed algorithm", Chan teaches a method of choosing an optimal candidate value to be used for matching a block from a first image with an area from a second image, the method comprising:

Making a set of candidate values for determining an area to be matched from the second image (Steps 1 and 2 described at the bottom of Column 1 on page 1638),

For each candidate value from the set, determining an area to be matched from the second image, based on said candidate value, matching the block from the first image with this area and calculating a matching error (Step 2 described at the bottom of Column 1 on page 1638), and

Choosing the optimal candidate value from the set based on the calculated matching errors (Steps 2-4 described at the bottom of Column 1 and top of Column 2 on page 1638),

As best understood by the examiner, the choosing is characterized in that the steps a, b and c are repeated when there is a change of the value of the chosen optimal candidate value from a previous repetition, using a comparison of a rise of the attendant matching error to a predetermined criterion (Page 1638 from Proposed algorithm to Result, specifically steps 5-8 described at the top of Column 2).

Chan teaches the repeating of the search using a smaller step size (Page 1638 from Proposed algorithm to Result). Chan does not teach the repeating of the search using the adjacent blocks. Wong teaches the searching of the adjacent blocks of a selected best match block for use in a motion estimation algorithm in order to provide a cost-effective video encoder (Col 1 Lines 46-55 and 65-67, Col 4 Lines 36-44, Fig. 7). It would have been obvious to one of ordinary skill in the art at the time of the invention to replace the step size block selection method of Chan with the neighboring block selection method in order to provide a more efficient motion estimation algorithm for a cost-effective video encoder.

[claim 2]

Chan and Wong teach the method of claim 1. Chan further teaches the predetermined criterion is a percentage of the matching error of the chosen optimal candidate value (Page 1638 Second Paragraph). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the predetermined criterion of Chan in order to adaptively adjust the number of candidates as taught by Chan.

[claims 3 and 4]

As best understood by the examiner, Chan teaches the adjusting of the threshold in order to find the global minimum versus the prior art that tended to get trapped in local minimum. The threshold (GT) is increased when the mean absolute difference is high and the threshold is decreased when the mean absolute difference is low. The location with the smallest difference is designated as the central location for the next search as required by claim 4 (Page 1638, Fig. 1). It would have been obvious to one

of ordinary skill in the art at the time of the invention to use the method of Chan in order to prevent the trapping in a local minimum.

Claim 5-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chan and Wong as applied to claim 1-4 above, and further in view of US Patent 5,473,379 to Horne.

[claims 5-9]

As best understood by the examiner, Chan and Wong teach the method of choosing an optimal candidate value to be used for matching a block from a first image with an area from a second image as shown above for claims 1-4. Chan teaches block motion estimation algorithms have been widely used in video coding standards such as H.261 and MPEG (Page 1637 "Introduction"). Chan does not teach the system or apparatus for the method of claims 1-4. Wong teaches the use of a personal computer to execute the algorithm (Col 6 Lines 53-56, Fig. 8). Horne teaches a system and apparatus for block based motion compensation for digital video compression such as MPEG1 or MPEG2 (Col 3 Lines 59-67, Col 4 Lines 1-26). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the method of Chan and Wong in the MPEG encoding system of Horne in order to provide an MPEG encoder that provides a motion estimation method that finds an optimal motion vector.

[claim 10]

Chan and Wong teach the method of block based motion estimation for coding standards such as MPEG2. Wong teaches the use of a display (84) as shown in Figure 8. Horne teaches the system and apparatus for MPEG encoding. Chan, Wong and

Horne do not teach the apparatus connected to a display for viewing of the video. It is well known in the art to take encoded video (MPEG2) and decode the video for use on a display (Official Notice). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the apparatus of Chan, Wong and Horne with the display of Wong in order to display the video.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erick Rekstad whose telephone number is 571-272-7338. The examiner can normally be reached on 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on 571-272-7418. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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